

## CLAIMS

1. A radio base station apparatus comprising:

determining means for determining a communication terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base station, based on a request signal in each of a plurality of uplink signals and which contains a request signal for requesting the use of the shared channel;

modulation means for modulating transmission data and a supplemental common pilot channel signal to be transmitted to the determined communication terminal apparatus; and

directivity control means for transmitting the transmission data and the supplemental common pilot channel signal under the same directivity condition.

2. A radio base station apparatus comprising:

determining means for determining a communication terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base station, based on a request signal in each of a plurality of uplink signals and which contains capability information on modulation scheme and a request signal for requesting the use of the shared channel;

spreading code selecting means for selecting a spreading code for use in spreading a supplemental common pilot channel, based on the capability information of the determined communication terminal apparatus; and

directivity control means for transmitting transmission data and the supplemental common pilot channel signal to be transmitted to the determined communication terminal apparatus under the same  
5 directivity condition.

3. A radio base station apparatus comprising:

determining means for determining a communication terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base  
10 station, based on a request signal in each of a plurality of uplink signals and which contains capability information on modulation scheme and a request signal for requesting the use of the shared channel;

pattern selecting means for selecting a pilot pattern  
15 on a supplemental common pilot channel, based on the capability information of the determined communication terminal apparatus; and

directivity control means for transmitting a transmission data and the supplemental common pilot  
20 channel signal to be transmitted to the determined communication terminal apparatus under the same directivity condition.

4. A radio base station apparatus comprising:

determining means for determining a communication  
25 terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base station, based on a request signal in each of a plurality

of uplink signals and which contains capability information on modulation scheme and a request signal for requesting the use of the shared channel;

control signal generating means for determining a modulation scheme based on the capability information of the determined communication terminal apparatus, generating a signal indicative of the determined modulation scheme, and inserting the generated signal as a control signal into a supplemental common pilot channel; and

directivity control means for transmitting the transmission data and the supplemental common pilot channel signal to be transmitted to the determined communication terminal apparatus under the same directivity condition.

5. A communication terminal apparatus comprising:

despreading means for despreading a downlink signal with each of all candidate spreading codes for a spreading code used in spreading a supplemental common pilot channel;

spreading code specifying means for comparing despread results on the candidate spreading codes to specify the spreading code used in spreading the supplemental common pilot channel; and

demodulation means for demodulating a downlink signal on a shared channel that is common to all communication terminals under control of a base station, by a demodulation scheme corresponding to the specified

spreading code.

6. A communication terminal apparatus comprising:

channel estimation means for performing channel  
estimation on a downlink signal with each of all candidate  
5 pilot patterns for a pilot pattern used on a supplemental  
common pilot channel;

pilot pattern specifying means for comparing channel  
estimation results on the candidate pilot patterns to  
specify the pilot pattern used on the supplemental common  
10 pilot channel; and

demodulation means for demodulating a downlink  
signal on a shared channel that is common to all  
communication terminals under control of a base station,  
by a demodulation scheme corresponding to the specified  
15 pilot pattern.

7. A communication terminal apparatus comprising:

first demodulation means for demodulating a control  
signal, inserted on a supplemental common pilot channel,  
indicative of a modulation scheme on a downlink signal;  
20 and

second demodulation means for demodulating the  
downlink signal on a shared channel that is common to all  
communication terminals under control of a base station,  
by a demodulation scheme corresponding to a demodulated  
25 result on the control signal.

8. A wireless communication method comprising:

a determining step of determining a communication

terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base station, based on a request signal in each of a plurality of uplink signals and which contains a request signal for requesting the use of the shared channel;

a modulation step of modulating transmission data and a supplemental common pilot channel signal to be transmitted to the determined communication terminal apparatus; and

a directivity control step of transmitting transmission data and the supplemental common pilot channel signal under the same directivity condition.

9. A wireless communication method comprising:

a determining step of determining a communication terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base station, based on a request signal in each of a plurality of uplink signals and which contains capability information on modulation scheme and a request signal for requesting the use of the shared channel;

a spreading code selecting step of selecting a spreading code for use in spreading a supplemental common pilot channel, based on the capability information of the determined communication terminal apparatus; and

a directivity control step of transmitting transmission data and the supplemental common pilot channel signal to be transmitted to the determined

communication terminal apparatus under the same directivity condition.

10. A wireless communication method comprising:

5 a determining step of determining a communication terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base station, based on a request signal in each of a plurality of uplink signals and which contains capability information on modulation scheme and a request signal for  
10 requesting the use of the shared channel;

a pattern selecting step of selecting a pilot pattern on a supplemental common pilot channel, based on the capability information of the determined communication terminal apparatus; and

15 a directivity control step of transmitting transmission data and a signal on the supplemental common pilot channel to be transmitted to the determined communication terminal apparatus under the same directivity condition.

20 11. A wireless communication method comprising:

a determining step of determining a communication terminal apparatus that uses a shared channel that is common to all the communication terminals under control of a base station, based on a request signal in each of  
25 a plurality of uplink signals and which contains capability information on modulation scheme and a request signal for requesting the use of the shared channel;

a control signal generating step of determining a modulation scheme based on the capability information of the determined communication terminal apparatus, generating a signal indicative of the determined modulation scheme, and inserting the generated signal as a control signal into a supplemental common pilot channel; and

a directivity control step of transmitting the transmission data and the supplemental common pilot channel signal to be transmitted to the determined communication terminal apparatus with the same directivity.

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